

ABSTRACT OF THE INVENTION

A method for tooling a pattern of retroreflective microcubes, which pattern can be subdivided into smaller increments within which there are straight line tooling paths, none of which pass through an otherwise solid part of the incremental pattern. The tooling paths within the various increments need not be parallel to a common plane.

Various adaptions of the method enable the tooling of a number of specific microcube shapes and for modifying such optical properties of the microcubes as entrance angularity, incidence angularity, orientation angularity, observation angularity, percent active aperture and retroreflectance. Specific techniques govern the pre-selection of cube parameters such as cube axis cant, cube apex decentration, and cube boundary proportions, which parameters can be adjusted independently of each other. Designs tooled by the method can have 100% active aperture at near zero degrees entrance angle.

The method involves providing a plurality of plates of micro thickness, each plate having at least one end comprised of a material that can be tooled with polished surfaces by means of an appropriate tool, tooling on said end of each plate an increment of the pattern, and assembling the plates together in various ways to form a master.

Retroreflective articles made by means of this technique are expected to provide superior performance when used in pavement markers, highway signs and other applications.